Space Weather Forecast

Issued on Tuesday, 01 March 2022 at 00:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of R1/Minor radio blackouts. Slight chance of Minor Geomagnetic Storm, increasing Day 4 (04 Mar).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low in the last 24 hours with a common class flare observed at 28/0918 UTC. This resulted in a coronal mass ejection (CME) near from the southeast limb. Analysis shows this does not have an Earth-directed component. No other Earth-directed CMEs were observed in the available imagery during the past 24 hours.
There is 6 sunspot regions on the visible disc. Generally these have been small, simple and stable. However, a new region in the northeast, AR2958, has shown signs of growth over the past 12 hours.

Solar Wind / Geomagnetic Activity: The solar wind showed characteristics a coronal hole enhancement. Wind speeds have been slightly elevated or elevated, varying between 460 and 530 km/s. The total magnetic field has eased back to weak, having been moderate until 28/0500 UTC, with the important north-south component, weak and generally positive. Resultant geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low, with Common-class flares expected, and just a slight chance of Moderate-class flares. This may increase slightly in the coming days, with a couple of potential regions rotating on in 2-3 days time.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast. A series of coronal hole fast wind connections are expected during this period, with winds likely to exceed 500 km/s at times. Geomagnetic activity is expected to be Quiet to Unsettled, with occasional Active intervals, and a very slight chance of Geomagnetic Storm intervals. This declining to mainly Quiet during day 2 (2nd). Earth may connect to a further coronal hole fast wind during day 4 (4th), this is more likely to give Minor Storm periods due to the time of year and negative polarity, although the timing is uncertain.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background, with no solar radiation storms expected through the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	5	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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